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known, suspected, or yet to be discovered "in the internal environment."

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### SPECIAL ARTICLES

#### A CASE OF DUPLICATE GENES IN *CREPIS CAPILLARIS* (L.) WALLR.

THE rosette leaves of *Crepis capillaris* (L.) Wallr. normally have a more or less pronounced pubescence on the lower surface of the midrib. Often the upper surface is also similarly pubescent, but not by any means in all cases, and the significance of this latter difference, if any exists, has not been learned.

In 1918 in a culture which had its origin from wild plants growing in Berkeley there was found a plant (17.192P<sub>2</sub>) which did not show the pubescence on the lower surface of the midribs of the rosette leaves. When selfed this plant reproduced the type and a strain of "smooth" leaved plants was established. Although there is some variation in the amount of pubescence on the ribs of different plants of the hairy strain, there is no difficulty in distinguishing the two groups.

Crosses between these races at first gave discordant results. More recently with larger cultures and perfected technique data have been collected which indicate that hairiness of the midribs is due to duplicate dominant genes, which are not in the same chromosome group.

Two F<sub>2</sub> cultures in 1921 gave 556 hairy- to 40 smooth-leaved plants, a ratio of 14.926 to 1.073 ± 0.106, which is a very good fit indeed. Among the F<sub>2</sub> plants there should be an equal number giving segregating populations and populations containing only one type of plant. Among those segregating in F<sub>3</sub> half should give 15 : 1 ratios and half 3 : 1 ratios.

Data from F<sub>3</sub> populations are not yet complete but cultures giving both 3 : 1 and 15 : 1 ratios have been obtained from another cross. These results show that the hairy plant used as pollen parent in this case was AABb which gave all hairy in F<sub>1</sub> and equal numbers of 3 : 1 and 15 : 1 populations in F<sub>2</sub>. This supplies also the necessary data to satisfy theoretical requirements for the duplicate gene interpretation.

Complete data from crosses involving hairy and smooth characters are reserved for a future publication.

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#### INHERITANCE OF GLANDULAR PUBESCENCE IN *CREPIS CAPILLARIS* (L.) WALLR.

THE usual wild type of this species has glandular pubescence on the involueral bracts and extending downward on the pedicel for some distance from the flower head.

In 1918 a single plant appeared which did not have these glandular hairs. Such plants have been designated as "bald." The culture in which this "bald" plant appeared grew from seed sent us from Copenhagen, Denmark. Since this first appearance, "bald" plants have been found in cultures derived from five other geographical locations as follows: England, Sweden, Chile, France and the Azores Islands.

The identity of the gene in all the cultures except that from France has been established by crossing, which in all cases produced only "bald" plants.

The bald character is produced by a single recessive gene. The F<sub>1</sub> plants obtained from crossing bald with glandular were completely glandular. In a culture of 77 back crossed plants 39 were glandular and 38 bald. A total of 210 F<sub>2</sub> plants gave a segregation of 174 glandular to 36 bald, the ratio being 3.314 : 0.685. The deviation in this case is 3.89 times the probable error. The major part of this deviation is due to one culture which produced 72 glandular to 2 bald plants. When this culture is excluded from the totals, there then remains 102 glandular to 34 bald, which is an exact 3 : 1 ratio. The F<sub>2</sub> bald plants which were tested bred true in F<sub>3</sub>. Only two glandular F<sub>2</sub> plants have been tested, both segregating in F<sub>3</sub>.

Detailed data for all bald cultures will be given in a future publication.

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